

portion of the planet's disk which is outside the solar limb is distinctly visible, the background being decidedly brighter than the surface of *Venus*, but that part of the planet which is on the Sun is somewhat darker than the rest. This is especially noticeable in No. 9.

It seems difficult to overlook a slight increase in the intensity of the light round *Venus* when she is wholly on the Sun; this, perhaps, appears clearest in No. 4, but it is perceptible in Nos. 2, 3, 4, 5, and 6.

No. 7 is exceedingly interesting, as it was taken at the most important moment, and confirms exactly what most astronomers observed at the moment of internal contact; no deformation of the planet, but merely a slight shade where the solar cusps are about to manifest themselves. There is no decided ring of light round the planet, either when on or off the Sun, but only a slight increase of brilliancy when *Venus* is on the Sun, and a general diffused light, on which *Venus*, when off the Sun, is seen projected. It would seem, therefore, that the solar envelopes outside the photosphere produce an effect on the sensitive plate sufficiently intense to manifest by contrast the dark body of the planet. The results also seem to point to a slight actinic power in the general surface of the planet, and a still greater power in its atmosphere.

It may as yet be, perhaps, rather premature to draw any general conclusions regarding the physical results obtained during the late Transit, especially as the most valuable observations are at present under discussion and cannot be published for a considerable time. It may, however, be useful to draw attention to such individual cases as come within our reach, as the opinion of those best able to judge in these matters may thus be elicited, and our many false notions be gradually eliminated, thus leaving a clearer field for the discussion of really important details.

*Stonyhurst Observatory,
1875, December 8.*

On the Posthumous Papers of the late Professor Rigaud.

By Major-General Gibbes Rigaud.

(Communicated by the Rev. Robert Main.)

When, in 1839, Professor Rigaud was so unexpectedly taken from among us, there was a great feeling among astronomers that Astronomy had met with a great loss, and that in one particular line, namely, that of Scientific Biography, his loss could hardly be replaced. The Marquis of Northampton, at the Anniversary Meeting of the Royal Society, on November 30,

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1839, said *inter alia*, "There was probably no other person of his age who was equally learned on all subjects connected with the history and literature of astronomy."

And his friend, Mr. Manuel Johnson, who succeeded him as Radcliffe Observer, referring to him in a printed reply to some criticisms on the work of the Observatory, spoke of him thus—"You have mentioned one, the late Mr. Rigaud, in affectionate regard for whose memory and in admiration of whose learning I yield to no one. His private virtues are remembered by many of us, and his public services will be remembered as long as Astronomy is a science cultivated amongst men."

Perhaps one of the best records of Professor Rigaud's accuracy and research was made in an article in the *Edinburgh Review* on "Sir Isaac Newton and his Contemporaries," which was published in October 1843, and which, from certain internal evidence, we should think was contributed by Professor De Morgan.

That a man cut off as Mr. Rigaud was should leave work uncompleted behind him is almost a matter of necessity; and it was known that at the time of his death he was contemplating both an edition of Pappus and also a Life of Halley, as a sequel to his *Miscellaneous Works* and *Life of Bradley*—but how far he had proceeded in his researches and lucubrations for this purpose was unknown.

Mr. Rigaud died in 1839, and for thirty-five years his papers remained carefully put away. They have, however, now been arranged, and a full table of contents completed, so that the contents of each parcel can be seen at a glance; and, that they might be accessible to all interested in him or his studies, they have been presented by his sons to the University of Oxford, to be deposited in the Library belonging to the two Savilian Professors of Astronomy and Geometry.

Among the Professor's papers were found large materials for a life of Halley, beautifully and clearly written, as all Mr. Rigaud's papers ever were, and almost ready for the press. That the life of Halley has long been a desideratum in Astronomical Biography is undeniable; but for a whole generation no one had appeared with the love of labour and spirit of research of Mr. Rigaud; it is therefore a matter for great congratulation that these inestimable papers were found, that the University of Oxford have agreed to print the work at their press, and that Professor Pritchard is in possession of all the materials collected, and has undertaken the task of editing them, with a *Life of Halley* by himself. If there were nothing but this to come out of this collection of papers the world might be content; but they are, we understand, very numerous and, what is of great importance, most legibly written, and a time will doubtless come when some one with leisure to work a mine of this sort may have infinite pleasure in finding all the Rigaud papers accessible to him.

We are enabled to give some slight sketch of these papers, which may not be without interest to some of our readers; though those who would have had most interest in looking through the work of one with whom they had been in constant correspondence, such as Bailly, Barnwell, Brewster, have all now disappeared from the scenes of their common labours.

The collection of the Rigaud papers as it now stands consists of eleven volumes of manuscript books, bound and labelled according to subjects, which he kept separate: two are entirely Halley; one Pound; another Bradley; two vols. Hearne; two Horrox, being a very careful transcript of the Greenwich MS. of the *Venus in Sole visa*, made at the time he was assisting Mr. Whetton in his researches for his *Life of Horrox*; for which, among other things, Mr. Rigaud translated the Latin Hexameters of Horrox into English verse.

There are also a good many parchment-bound books full of mathematical work and problems which he here recorded; for his careful diligence, in recording in common-place books the parts of his reading which he felt might at some future time be wanted, was perfectly marvellous. The neatness and method in which he kept his papers was remarkable. Mahogany boards and paper were cut to quarto and octavo sizes, and each paper when completed was sewn together, and when bundles had attained to a sufficient size a new one was commenced. The consequence is that all his work is beautifully preserved and legibly transcribed. It would be impossible for us to give a table of contents of all these bundles, as, in addition to all the books, there are twenty-four bundles, each with its table of contents; but some idea of the extent of these labours may be obtained from the following figures. Of the bundles of quarto size in mahogany boards there are five, and in these there are nearly sixty different papers. In the twelve bundles of octavo size in mahogany boards there are over 200 separate papers, and amongst them a list of all the papers which have been printed, and where his various contributions to the scientific literature of the day are to be found.

There were in an old box many bundles of old letters which have been carefully arranged in guard-books. These have all been arranged alphabetically, according to the names of the writers, and the guard-books lettered and a table of contents made to each, so that reference is easy; and of these letters there are 487.

There is also a guard-book containing an interesting series of 64 autograph letters, written by the most famous men of science of the last century to Mr. Magellan, as his name is always spelt, though the name should properly be written "Jean Hyacinthe de Magalhaens." There is a sketch of his life in the *Nouvelle Biographie Générale*, vols. xxxi.-11, which tells us that he was a Portuguese, born at Lisbon in 1723. He was originally an ecclesiastic, but being fonder of Natural Phi-

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losophy than anything else, he came to England in 1764, and died at Islington in 1790. He had various artists under his superintendence, and produced the best instruments of the day. He was made F.R.S. in 1774, and was a member of the Academies of Science of Paris, Madrid, and St. Petersburg.

How this collection of letters passed into the hands of Professor Rigaud there is nothing to inform us; but there they are—long autograph letters on science and scientific instruments, in the autograph writing of such men as Koestner, Achard, Anisson, Barthélemy, Benyouski, Bernouilli, Boscovich, Cassini, Espinoza, Euler, Fonseca, Gavallon, W. Herschel, Lalande, Landriani, Messier, Turgot, Volta, and many more.

But we think we have now said enough to show that a collection of papers which may be very valuable have been opened, as it were, to any one to whom they are of interest; and we think it would be well if many collections of papers left by men of science were deposited in libraries, instead of being retained in families.

Corrected Mean Solar Times of the Beginning and Ending of the Solar Eclipse of 1875, September 28-29, as observed at the Royal Observatory, Greenwich.

(Communicated by the Astronomer Royal.)

The mean solar times of the beginning and ending of the Solar Eclipse as observed at the Royal Observatory, inserted on pages 39 and 40 of the *Monthly Notices* for November, should be diminished each by four minutes, owing to a constant error having been made inadvertently in the conversion of the observed sidereal times into mean solar times. It is considered, therefore, advisable to reprint the corrected resulting mean solar times of the beginning and ending of the Eclipse, to be substituted for those on pages 39 and 40.

Observations of the Beginning of the Eclipse.

	Instrument.	Clock or Chronometer.	Mean Solar Time. d h m s	Observer.
(a)	E. Equatoreal	Earnshaw	28 23 26 7.1	D.
(b)	Altazimuth	Graham I	23 27 10.8	L.
(c)	Simms 4-in. No. 2	Brockbanks 436	23 26 13.8	A. D.
	6-in. Equatoreal	Webb 53	23 27 39.3	C. B. N.
(d)	2½-in. Altazimuth	Dent 2015	23 26 4.0	J. W. N.